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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/890,471 | 08/01/2001 | N. Edward Berg | BERG99.01CIP | 3251 |

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HAYES, SOLOWAY P.C.
130 W. CUSHING STREET
TUCSON, AZ 85701

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| EXAMINER |
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CULBERT, ROBERTS P

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| ART UNIT | PAPER NUMBER |
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1763

DATE MAILED: 11/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/890,471

Applicant(s)

BERG, N. EDWARD

Examiner

Roberts Culbert

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/25/04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,8,10,12-16,18,20,21,23,25-27,29,34-36 and 38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,8,10,12-16,18,20,21,23,25-27,29,34-36 and 38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION***Response to Arguments***

Applicant's remarks filed 10/25/04 have been fully considered, however the amendments to the claims 1 and 12 are not supported by the specification, and therefore do not overcome the rejections under U.S.C. 112 as recited below.

It is noted that the limitation of employing a fusible ink to build up metallic patterns has been removed from Claim 34. Therefore, Claims 34 and 38 are subject to rejection over U.S. Patent 4,359,516 to Nacci et al. cited in the previous Office Action.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6, 8, 10, 12-16, 18, 20, 21, 23, 25-27, 29, 35 and 36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding Claims 1 and 12, there is no support in the specification for preheating the substrate prior to printing a circuit pattern on the substrate. The description of the preheating step is found on page 5, lines 20-21 of the specification. The preheating step is performed prior to printing a pattern mask on a conductive layer. After printing the pattern mask on the conductor layer(s), circuit patterns are built up by plating not by printing. The printing of conductor patterns is described in a separate embodiment of the invention that does not include the preheating step.

Regarding Claims 35 and 36, there is no support in the specification for printing a solder mask employing fusible ink comprising polymeric binder containing colloidal metal such as silver

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or platinum. The description of the step of printing a solder mask describes only using fusible ink.

Polymeric binders containing colloidal metals are only used to form conductors (See Page 7 of the Specification)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1-6, 8, 10, 12-16, 18, 20, 21, 23, 25-27, 29, 35 and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Since the claims are not adequately described in the specification as recited above, they are not described with reasonable clarity and precision.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 34 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S.

Patent 4,359,516 to Nacci et al.

Nacci et al. teaches a method of forming a circuit board comprising supplying a non-conducting substrate having a top surface and a bottom surface each covered with a top and a bottom metallic layer, respectively; (Col. 11, Lines 3-10) preheating the substrate; (Col. 3, Lines 13-14) direct image printing a pattern mask on the top and the bottom metallic layers, leaving exposed metallic patterns using electrophotographic, ink jet, relief press or lithographic printing techniques; (Col. 1, Line 53- Col. 3, Line 10) building-up the exposed metallic patterns to increase the thickness thereof; (Col. 10, Lines 34-37) removing the pattern mask whereby to expose

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previously unexposed portions of the metallic layers; and etching the metallic layer coated substrate to remove a portion of the exposed metallic layers so that at least a portion of the built-up metallic patterns remains intact. (Col 10, Lines 34-65) Nacci teaches that the step of printing a pattern mask employs a fusible (fixable by heating) ink. (Col. 5, Lines 25-35) Nacci teaches that the board is heated to a temperature in the range of 100-160°C (Col. 9, Lines 10-12)

Allowable Subject Matter

Claims 1-6, 8, 10, 12-16, 18, 20, 21, 23, 25-27 and 29 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action, since the prior art does not teach the limitations as recited in the amended claims filed 6/14/04.

However, if the above-cited limitations were simply removed from claims 1 and 12, claims 1-6, 8, 10, 12-16, 18, 20, 21, 23, 25-27 and 29 would remain subject to the rejections of the Final Office Action sent on 2/13/04.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571) 272-1433. The examiner can normally be reached on Monday-Friday (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571) 272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

R. Culbert

